

Microfluidic technology fuels the growing microRNA revolution - LC Sciences tops 30th customer publication



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Press Release Summary: LC Sciences announced today the publication of the 30th peer-reviewed study by one of its



customers using the company's microarray service for analyzing microRNA expression profiles and for discovery of novel small RNAs. These studies, by leading researchers in

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Press Release Body: Houston, TX – February 27, 2008 – **LC Sciences** announced today the publication of the **30th peer-reviewed study**

by one of its customers using the company's microarray service for analyzing **microRNA** expression profiles and for discovery of novel small RNAs. These studies, by leading researchers in the field, contribute to a fast growing body of knowledge defining this recently discovered class of regulatory RNAs.

LC Sciences' microRNA profiling service, powered by its **µParaflo® microfluidic technology**, provides quick, reliable, fully analyzed data enabling researchers to immediately move forward with innovative research, and publish their results faster. Microarray results require extensive validation prior to publication and the speed with which researchers using this **microRNA profiling service** have published their discoveries demonstrates the high-quality and reliability of these results.

It has become clear that the simple idea that DNA makes RNA which makes protein is not a complete picture. We now know that RNA does much more than just make protein. **Transcriptome microRNAs** and other small RNAs found in non-coding regions of genomes, once considered unimportant, even "junk", have been found to regulate the expression of genes acting in almost every area of biology. The publications to date by LC Sciences' customers span a diverse range of study areas, including cancer research, neuroscience, cardiovascular research, reproductive biology, plant science, virology, stem cell research, endocrinology, and small RNA discovery.

The study of **microRNA** has attracted intense attention and one of the most exciting aspects of this field is many scientists are now thinking about just how much more we don't know. Just as the regulatory functions of some of the known **microRNAs** are finally understood, many more **microRNAs** are just being discovered. The number of microRNA sequences in the public database (**miRBase**) has been increasing steadily as new **microRNAs** are experimentally verified and deposited there.

Especially in this rapidly evolving field, it is important for scientists to have access to the most up to date information and research tools. **LC Sciences** is giving researchers an edge through the use of their flexible **µParaflo® technology**. On chip synthesis (vs. spotting) of the most up to date **microRNA** probes sequences from miRBase as well as addition of custom sequences is enabled through a unique combination of microfluidics, digital photolithography, and novel synthesis chemistry. This ensures that researchers have the most complete picture of **microRNA** expression in their samples and,

through the use of completely custom microarrays, allows for discovery of novel small RNAs as well as validation of computationally predicted **microRNAs**. The **μParaflo®** technology's exceptional sensitivity and specificity, and unique ability to stay current in this rapidly developing field has enabled groundbreaking research, as evidenced by the number of studies which have appeared in high impact journals, including Nature, Science, PNAS, Nucleic Acids Research, and RNA.

The 30th study, entitled "**Endogenous human microRNAs that suppress breast cancer metastasis**" appeared in the January 10th issue of Nature. Researchers at the **Memorial Sloan-Kettering Cancer Center** uncovered a set of microRNAs for which expression is specifically lost as human breast cancer cells develop metastatic potential. They further showed that restoring the expression of these microRNAs in malignant cells suppresses lung and bone metastasis by human cancer cells in vivo. The strong association of the loss of expression with metastatic relapse suggests the potential for the use of these molecules in prognostic stratification of breast cancer patients in addition to conventional clinical and pathological staging markers.

*"We are very excited about the announcement of the 30th peer-viewed publication by one of our customers," says **Chris Hebel, Director of Business Development at LC Sciences**. "This (**microRNA**) is turning into a very competitive area of research and scientists are racing to be the first to describe the mechanism of **microRNA** as it relates to their field of study. We're finding that many researchers will send us samples that have no relation to any of the previously described microRNA regulated areas just to see if **microRNA** is involved in any way at all in their system. We're happy to provide the first step into this exciting new field for them."*

About μParaflo® Technology - The **μParaflo® technology** is a microfluidic platform for in situ parallel synthesis of biomolecular chips and miniturization of bioassays including binding and enzymatic reactions. This unique platform technology is based on a new class of three-dimensional pico-liter microfluidic reaction devices, and a digital light controlled synthesis method that employs conventional oligonucleotide or peptide synthesis chemistry; a completely programmable process. The seamless integration of these multidisciplinary technologies enables a significant advance in parallelization, miniaturization, customization, and automation.

About LC Sciences - LC Sciences is a genomics and proteomics products company offering a comprehensive line of DNA, RNA, and peptide microarrays for nucleic acid/protein profiling and functional analysis, biomarker-discovery, novel drug screening, and the custom development of miniaturized assay devices for diagnostics and biosensing applications. Based on the **µParaflo® microfluidics technology**, **LC Sciences'** innovative products offer significant flexibility and customization capability for rapidly evolving, diverse customer needs. In an era of rapid technological advancement, LC Sciences offers service products which enable efficient one-stop solution for assays of DNA, RNA, protein, enzymes, antibodies, or small molecules. **LC Sciences** also provides unique synthetic DNA and RNA products such as **OligoMix®**, generated using their microfluidic biochip synthesizer. These innovative products drive synthetic biology and systems biology applications by reducing the cost and increasing the speed of highly multiplexing large-scale nucleic acid and protein engineering experiments.

More information about **LC Sciences** is available at www.lcsciences.com.

1. Tavazoie SF, Alarcón C, Oskarsson T, Padua D, Wang Q, Bos PD, Gerald WL, Massagué J. (2008) Endogenous human microRNAs that suppress breast cancer metastasis. Nature 451(7175), 147-52.

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